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Identifying the Carotid 'High Risk' Plaque: Is it Still a Riddle Wrapped up in an Enigma?

Golledge J., Siew D-A. Eur J Vasc Endovasc Surg 2007;35:2-8.

The selection of patients for many vascular interventions has largely been based on the severity of luminal narrowing. However, histological data from the coronary and carotid circulations suggest that other plaque features such as inflammation and fibrous cap thickness may be more important in predicting future thrombo-embolic events.

This paper reviews the available evidence for identifying carotid atheroma at high risk of being associated with clinical events. Despite a large number of imaging and biomarker studies, 'presenting symptoms' remains the most clearly identified risk predictor for ischaemic stroke in patients with carotid stenosis. At present, no imaging modality or plasma biomarker has clearly identified a high risk sub-group of asymptomatic carotid stenoses for which the benefit of carotid intervention is comparable to that of symptomatic atherosclerosis.

Emerging developments in MRI, transcranial Doppler and scintigraphic imaging hold some promise for the future. However, the multiple mechanisms and sites determining ischaemic stroke occurrence in association with atherosclerosis suggests that systemic therapies are likely to be the most powerful modality in the management of asymptomatic disease.

Candidate Gene Association Studies in Abdominal Aortic Aneurysm Disease: A Review and Meta-Analysis

Thompson A.R., Drenos F., Hafez H., Humphries S.E. Eur J Vasc Endovasc Surg 2007;35:19-30.

Background: Candidate gene analysis has been frequently used in attempts to understand the pathological processes involved in many aspects of AAA disease.

Methods: This paper sets out a systems approach to reviewing AAA candidate gene analysis studies, whilst, explaining the key principles and design limitations of this universally applied technique. In addition we have performed a meta-analysis of six gene polymorphisms (ACE I/D, MTHFR + 677C > T, MMP9−1562C > T, Il-1Beta/3953C > T, eNOS 4a/4b & TIMP1/+434C > T) reported in multiple case control studies.

Results and conclusions: Three of these polymorphisms were associated with a significant risk of AAA, ACE RR 1.33 [95% CI 1.20–1.48], MTHFR RR 1.14 [1.08–1.21] and MMP9 RR 1.09 [1.01–1.18]. These differences have been previously reported as equivocal, within a context of contradictory studies and as such this meta-analysis provides new evidence for their involvement in AAA disease. The plausibility of these findings is discussed within the context of a systems approach to the pathology of AAA disease.

Laparoscopic Diagnosis and Treatment of Aortic Vascular Prosthetic Graft Infections in a Porcine Model

Gao H., Lund L., Prag J., Sandermann J., Lindholt J.S. Eur J Vasc Endovasc Surg 2007;35:41-45.

Objectives: To study the feasibility and efficacy of experimental laparoscopy in the diagnosis of aortic graft infection in pigs.

Material and methods: Eight pigs had an aortic tube graft implanted and inoculated with either 5×10^4 or 10^6 CFU of *Staphylococcus aureus* ATCC 29213. Laparoscopy was performed after a median of 20 days with debridement and sampling for bacterial culture. Thereafter, the grafts were locally soaked in rifampicin and postoperatively, the pigs received rifampicin and ciprofloxacin orally for two weeks and were then sacrificed.

Results: All pigs developed graft infection. One pig died from severe clostridial septicaemia before laparoscopy could be performed. The remaining pigs had all samples for bacterial culture taken by laparoscopy from the inflamed tissue. The temperature dropped significantly after laparoscopy, and no macroscopic signs of infection presented at autopsy. However, only culture from one pig was without *S. aureus* at autopsy.

Conclusions: Laparoscopy is a potential diagnostic tool for aortic graft infection and also affords the opportunity to carry out bacteriological sampling and local antibiotic treatment. The efficacy of laparoscopic treatment needs further evaluation.

Secondary Medical Prevention among Danish Patients Hospitalised with Either Peripheral Arterial Disease or Myocardial Infarction

Gasse C., Jacobsen J., Larsen A.C., Schmidt E.B., Johannesen N.L., Videbæk J., Sørensen H.T., Johnsen S.P. Eur J Vasc Endovasc Surg 2007;35:51-58.

Objective: We compared the use of secondary prevention among patients with a first-time hospitalisation for peripheral arterial disease (PAD) of the lower limb with that among patients with a first-time hospitalisation for myocardial infarction (MI).

Design and materials Population-based follow-up study between 1997 and 2003 using registry data from the counties of Northern Jutland, Aarhus and Viborg, Denmark.

Results: Between 1997 and 2003, within 180 days after hospital discharge, 26% of patients with lower limb PAD (n = 3,424) used antiplatelet drugs, 10% statins, 22% ACE-inhibitors/AT-II receptor antagonists and 13% betablockers compared with 55%, 46%, 42% and 78% respectively among patients with MI (n = 11,927). Patients with PAD were substantially less likely than patients with MI to use antiplatelet drugs [adjusted relative risk (RR) = 0.39 (95% confidence interval (CI): 0.36–0.41)], statins [adjusted RR = 0.21 (95% CI: 0.19–0.23)], ACE-inhibitors/AT-II receptor antagonists [adjusted RR = 0.43 (95% CI: 0.40–0.47)] and beta-blockers [adjusted RR = 0.10 (95% CI: 0.09–0.11). Between 1997 and 2003 secondary prevention increased considerably in both patient groups, but the disparity in treatment persisted.

Conclusions: Efforts to further increase secondary prevention among patients with PAD are needed urgently.

Human Umbilical Vein versus Heparin-Bonded Polyester for Femoro-Popliteal Bypass: 5-year Results of a Prospective Randomized Multicentre Trial

Scharn D.M., Dirven M., Barendregt W.B., Boll A.P.M., Roelofs D., van der Vliet J.A. Eur J Vasc Endovasc Surg 2007;35:61-67.

Purpose: To compare long-term patency of Heparin-Bonded Dacron (HBD) and Human Umbilical Vein (HUV) vascular prostheses in above-knee femoro-popliteal bypass surgery.

Design: A prospective randomized multi-centre clinical trial.

Patients and methods: Femoro-popliteal bypasses were performed in 129 patients between 1996 and 2001. After randomization 70 patients received an HUV and 59 an HBD prosthesis. Patients were followed up every three months during the first postoperative year and yearly thereafter. The median follow-up was 60 months (range 3–96 months). Graft occlusions were detected by duplex scanning, angiography or surgical exploration.

Results: The cumulative primary patency rates were 79%, 66% and 58% at 1, 3 and 5 years postoperatively. Primary patency rates for HUV were 74%, 64% and 58% at 1, 3 and 5 years and 84%, 68% and 58% for HBD, respectively (log-rank test, p = 0.745). Overall secondary patency rates were 82%, 72% and 61% at 1, 3 and 5 years postoperatively. The overall cumulative limb salvage at 5 years follow-up was 89% (CI 80%–91%) and was not dependent on graft type. Smoking (p = 0.019), number of patent crural arteries (p = 0.030) and previous cerebro-vascular events (p = 0.030) were significant predictors of graft occlusion.

Conclusion: There was no difference in long-term graft performance between HUV and HBD for above knee infrainguinal bypass.

Near-infrared Spectroscopy for Evaluation of Peripheral Vascular Disease. A Systematic Review of Literature

Vardi M., Nini A. Eur J Vasc Endovasc Surg 2007;35:68-74.

Objectives: To assess near-infrared spectroscopy (NIRS) as a method for the diagnosis and evaluation of peripheral vascular disease.

Search strategy: MEDLINE and CENTRAL were searched with a search protocol presented below. Handsearching through reference lists of the retrieved articles and reviews was conducted.

Main results: 224 and 57 abstracts from MEDLINE and CENTRAL respectively were retrieved from which 21 studies were selected. NIRS was evaluated for the diagnosis and severity evaluation in patients with peripheral vascular disease. Its parameters were shown to reflect the clinical status of patients, with good correlation to existing methods.

Conclusions: Currently NIRS technology can serve as an adjunct method for the diagnosis and evaluation of patients with peripheral vascular disease.